In the Claims:

1. (Currently Amended) An antenna for communication with a satellite, the antenna being for use on a satellite terminal, comprising:

a one-dimensionally rotating plate for mechanically rotating in a horizontal plane while maintaining a vertical position and scanning for wave signals in the azimuth direction;

a plurality of radiation elements positioned on said rotating plate for one-dimensionally electronically scanning for wave signals in an elevation direction, said radiation elements forming respective element signals;

first coding circuitry coupling a respective code to a respective one of the element signals to form respective coded element signals;

a first multiplexer associated with said plurality of radiation elements for consolidating the coded element signals received at each of said plurality of radiation elements to an analog bit stream;

an analog to digital converter for converting said analog bit stream to a digital bit stream;

filter circuitry for forming multiple digital signals ~~beams~~ corresponding to respective coded element signals from said digital bit stream;

digital beam forming circuitry beam forming multiple digital beam signals from the multiple digital signals;

second coding circuitry coupling respective beam codes to each of the multiple digital beam signals to form a plurality of coded digital beam signals;

a second multiplexer consolidating the plurality of coded digital beam signals to form a signal stream; and

a digital receiver determining signal strengths for the coded ~~element~~ digital beam signals in the signal stream and determining a transmit direction by identifying one of the plurality of coded digital beam signals having ~~locking onto~~ a strongest signal having a corresponding element, ~~so that the corresponding element can be used in transmission~~.

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2. (Original) The antenna of claim 1, wherein said plurality of radiation elements are a plurality of parallel cross-slotted waveguides.

3. (Original) The antenna of claim 2, wherein each of said plurality of parallel cross-slotted waveguides includes a slotted septum therein.

4. (Original) The antenna of claim 1, wherein said circuitry for forming multiple digital beams does so through FFT techniques.

5. (Original) The antenna of claim 1, wherein said antenna may be utilized on a mobile vehicle.

6. (Cancelled)

7. (Currently Amended) An antenna for communication with an equatorial satellite constellation, comprising:

a one-dimensionally rotating plate for mechanically rotating in a horizontal plane while maintaining a vertical position and scanning for a wavefront of wave signals in an azimuth direction;

a plurality of radiation elements positioned on said rotating plate for one-dimensionally scanning in an elevation direction, receiving the wave signals and generating respective element signals in response thereto;

first coding circuitry coupling a respective code to a respective one of the element signals to form respective coded element signals;

apparatus for positioning said radiation elements such that the wavefront will be in alignment with a major axis of said plurality of radiation elements;

a first multiplexer device being in communication with each of said plurality of radiation elements for converting said plurality of coded element signals into an analog bit stream;

an analog to digital converter for converting said analog bit stream to a digital bit stream;

filter circuitry ~~a device~~ for forming multiple digital ~~beams~~ signals from said digital bit stream; and

digital beam forming circuitry beam forming the multiple digital beam signals from the multiple digital signals;

second coding circuitry coupling respective beam codes to each of the multiple digital beam signals to form a plurality of coded digital beam signals;

a second multiplexer consolidating the plurality of coded digital beam signals to form a signal stream;

a digital receiver for processing said ~~multiple digital beams~~ coded digital stream signals from said signal stream and determining a transmit direction by identifying one of the plurality of coded digital beam signals having ~~to determine~~ a corresponding element with a strongest signal strength~~, so that the corresponding element can be used for transmission~~[[:]] , said digital receiver

~~wherein the antenna is able to lock onto~~ determining a second beam corresponding to a second equatorial satellite in the constellation before handing over from a first equatorial satellite.

8. (Original) The antenna of claim 7, wherein said device for forming multiple digital beam forms utilizes an FFT technique to provide for retrodirectivity.

9. (Previously Presented) The antenna of claim 7, wherein said antenna transmits said multiple digital beams to a plurality of satellites in the equatorial satellite constellation.

10. (Original) The antenna of claim 8, wherein said plurality of radiation elements are a plurality of interdigitally spaced slotted wave guides.

11. (Original) The antenna of claim 7, wherein said rotating plate is generally circular in shape.

12. (Original) The antenna of claim 11, wherein each of said plurality of interdigitally spaced slotted waveguides includes a slotted septum therein.

13. (Currently Amended) A method for forming multiple beams at a satellite antenna comprising:

providing a plurality of radiation elements on ~~a surface of said satellite antenna~~ one-dimensionally rotating plate for receiving a plurality of individual wave signals and forming respective element signals;

one-dimensionally rotating said plurality of radiation elements in an azimuth direction and one-dimensionally electronically scanning in an elevation direction so ~~such~~ that a wavefront of said plurality of individual wave signals is in alignment with a major axis of said plurality of radiation elements;

coding the respective element signals to form coded element signals;

consolidating said plurality of coded element signals into an analog signal;

converting the analog signal to a digital signal;

forming multiple digital ~~beams~~ beam signals from said analog signal after match filtering and removing a code;

coupling respective beam codes to each of the multiple digital beam signals to form a plurality of coded digital beam signals;

consolidating the plurality of coded digital beam signals to form a signal stream;

determining signal strengths for the coded ~~element~~ digital beam signals; and

determining transmit direction by determining a strongest signal of the signal strengths and a corresponding element, ~~and~~

~~transmitting a transmit beam using the corresponding element~~.

14. (Cancelled)

15. (Currently Amended) The method of claim [[14]] 13, further comprising:

utilizing FFT techniques to form said multiple digital ~~beams~~ beam signals to provide for satellite retrodirectivity.

16.-18. (Cancelled)

19. (Original) The method of claim [[18]] 13, wherein said plurality of radiation elements are a plurality of cross-slotted waveguides.

20. (Original) The method of claim 19, wherein said plurality of cross-slotted waveguides are parallel and interdigitally spaced with respect to each other.

21. (Currently Amended) A phased array antenna for communication with an equatorial satellite constellation, comprising:

a rotating plate for electronically scanning for a wavefront of wave signals ~~in elevation and for mechanically scanning for said wavefront of wave signals~~ in an azimuth direction;

a plurality of elongated waveguide ~~radiation~~ elements disposed in parallel ~~positioned~~ on said rotating plate for one-dimensionally scanning in an elevation direction, receiving the wave signals and generating elements signals in response to the wave signals, each of said plurality of ~~radiation~~ waveguide elements having a major axis and a minor axis;

apparatus for positioning said radiation elements such that the wavefront will be in alignment with the major axis of said plurality of radiation elements;

a first multiplexer device being in communication with each of said plurality of radiation elements for converting said plurality of coded element signals into an analog bit stream;

an analog to digital converter for converting said analog bit stream to a digital bit stream;

filter circuitry for forming multiple digital signals from said digital bit stream;

digital beam forming circuitry beam forming the multiple digital beam signals from the multiple digital signals;

second coding circuitry coupling respective beam codes to each of the multiple digital beam signals to form a plurality of coded digital beam signals;

a second multiplexer consolidating the plurality of coded digital beam signals to form a signal stream; and

a digital receiver for processing said coded digital stream signals from said signal stream and determining a transmit direction by identifying one of the plurality of coded digital beam signals having a corresponding element with a strongest signal strength

~~apparatus associated with said plurality of radiation elements for coding the elements signals according to location to form coded elements signals and consolidating the coded element signals received at each of said plurality of radiation elements into a first bit stream;~~

~~a multiple beam former for forming multiple beams from said first bit stream; and~~

~~a receiver for determining a corresponding element with a strongest signal strength, so that the corresponding element can be used for transmission~~.

22. (Cancelled)

23. (Currently Amended) The antenna of claim 21, wherein each of said plurality of elongated ~~radiation~~ waveguide elements ~~are~~ is cross-slotted waveguides~~, which are aligned parallel to one another on the antenna~~.

24. (Currently Amended) The antenna of claim 23, wherein each of said plurality of ~~radiation~~ waveguide elements includes a slotted septum therein.

25. (Currently Amended) The antenna of claim 21, wherein the antenna ~~may be utilized~~ is disposed on a mobile vehicle.

26.-27. (Cancelled)

28. (Previously Presented) The antenna of claim 21, wherein the antenna is configured with a low profile.

29. (Previously Presented) The antenna of claim 21, wherein the antenna is in communication with a commercial satellite terminal.

30.-37. (Cancelled)